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ABSTRACT

The nature of undergraduate students' out-of-class interactions with peers was studied through a survey of all undergraduate students at the University of Melbourne, Australia. The most common reason for peer interaction was to discuss assignments. There is a significant positive relationship between the frequency of such peer interaction and the variables of student satisfaction with the university experience and students' perceptions of how well they are coping with study. Differential interaction patters exist depending on year group, age, and language background. The study contributes to understandings of the role and nature of students' out-of-class peer interactions. It also has implications for enhancing the quality of student learning, engagement, and support structures. An appendix contains sample survey items. (Contains 2 tables, 1 figure, and 20 references.) (Author/SLD)

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Out-of-class engagement in undergraduate learning communities: The role and nature of peer interactions

Abstract

This paper reports on the nature of undergraduate students' out-of-class interactions with peers. All undergraduates in one Faculty at the University of Melbourne were surveyed. The most common reason for peer interaction was to discuss assignments. There is a significant positive relationship between frequency of such peer interaction and the variables of student satisfaction with the university experience and their perceptions of how well they are coping with study. Differential interaction patterns exist depending on year group, age, and language background. The study contributes to understandings of the role and nature of students' out-of-class peer interactions. It also has implications for enhancing the quality of student learning, engagement and support structures.

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Out-of-class engagement in undergraduate learning communities: The role and nature of peer interactions

Students' engagement with learning in higher education is the result of a combination of factors including classroom experiences, coursework and curricular patterns, and out-of-class experiences (Terenzini et al., 1995). While classroom experiences and coursework patterns are relatively easy to observe and document, students' out-of-class experiences pose a greater challenge for the higher education researcher. Out-of-class experiences span diverse contexts including formal and informal interaction with peers and faculty, involvement in campus cultural, sporting and social events and co-curricular activities such as orientation events and programs. They include intangible elements such as the culture of a campus or faculty and the hidden curriculum evident in the values of an institution. This paper reports on a study of one dimension of students' out-of-class activities: their interaction with peers in a university learning community, and the relationships between patterns of peer interaction and variables such as attitudes to study, achievement levels, coping and overall satisfaction with university experience. It also provides some evidence of group differences in peer interaction patterns according to year group, age and language background.

Out-of-class experiences in higher education

Quality learning communities in higher education result from dynamic interactions between educationally purposeful activities within and outside formal classroom environments. Out-of-class experiences are defined as those within an institutional context which are related to students' academic endeavours and which contribute to student learning outcomes (Terenzini et al., 1995). These experiences include interactions with peers and faculty members and student involvement in clubs and campus-based organizations. Terenzini and colleagues also include in this category the number of non-assigned course-related books read and the extent of students' experiences in the arts (e.g., "talking about art with other students at college").

Positive out-of-class experiences promote student engagement and integration in higher education, enhancing satisfaction and retention (Light, 2001; Tinto, 1993). Student persistence and educational achievement are positively related to students' out-of-class activities. Kuh and colleagues (2003; see also Kuh, 1993) identify an extensive range of outcomes of student engagement in activities beyond formal classroom settings. Broadly, these include: i) gains in cognitive development; ii) enhanced knowledge acquisition and application; iii) appreciation of and ability to relate to individuals from a range of backgrounds and perspectives; iv) interpersonal and intrapersonal competence; and v) practical competence including time management, decision-making and problem-solving skills.

While evidence points to the value of out-of-class experiences for students in general, Terenzini et al. (1995) found that the amount of time spent socialising with friends was negatively related to gains in academic interest levels. However, they concede that closer study of the nature and quality of student socialising activities is warranted, pointing out that such social activities may be educationally beneficial in certain amounts. The present study represents a response to the call for closer study of particular forms of out-of-class peer interactions and their variation across student groups. It also draws attention to some of the ways in which out-of-

class experiences are changing as a result of the impact of information and communications technologies (ICTs) such as email and online discussion fora.

Peer interactions in university learning communities

The development of mature interpersonal relationships is central to establishing a healthy identity and sense of self in higher education (Chickering & Reisser, 1993). Learning communities provide an ideal context for such development. There are several models of learning communities (see Goodsell Love & Tokuno, 1999) which share common characteristics including a focus on students working together on collaborative tasks, forming study groups and spending time socialising outside formal class settings.

Peer interaction is a key to the success and dynamic nature of learning communities (McInnis, James & Hartley, 2000). Social interaction with peers is positively linked to the quality of student effort and in turn, learning and persistence (Tinto, 1993). There is a favourable connection between peer interactions and students' academic achievement, development and satisfaction in the university context (McInnis & James, 1995). Some even argue that social integration may have a more influential role in student persistence than academic integration (Milem & Berger, 1997). Students who fail to find their niche in their university's social and academic system tend to have relatively low levels of commitment to the institution and degree completion (Astin, 1993). Involvement with peers is a significant factor in perceived institutional and peer support and a positive predictor of involvement with faculty (Milem & Berger, 1997).

Patterns in the ways students interact and collaborate with peers vary. For instance, McInnis, James and Hartley (2000) found that first year students in the fields of Agriculture, Law and Education typically engage in collaborative study more than do their peers in Arts and Science. Tierney (1992) argues for substantial cultural differences in the ways students interact and are socially integrated in higher education. While some such sources of difference have been documented, there is little evidence of research on group differences in students' out-of-class peer interactions. A survey of current research highlights the need for finer-grained studies of the changing nature of students' out-of-class experiences, how these differ depending on student background, and their relationships to students' attitudes to and perceptions of their learning experiences in higher education. To this end, the aim of the present study is to investigate the nature of students' out-of-class peer interactions and how these vary across student groups within a Faculty-based learning community.

Method

Conceptual Framework

The conceptual framework for this study is drawn from the widely acknowledged college impact research in the United States (e.g., Astin, 1993; Kuh & Vesper, 1997; Pascarella & Terenzini, 1991, 1998), along with extensive national research data on the university experience in Australia (e.g., McInnis, 2002; McInnis & James, 1995; McInnis, James & Hartley, 2000). The framework for the study is based on the conceptual model of Terenzini et al. (1995) which depicts the reciprocal relationships between students' classroom experiences, their coursework and curricular patterns and out-of-class experiences in the institutional context. The model also proposes that students' pre-college/university traits have a direct bearing on each of these

variables which in turn impact on learning outcomes. The model developed by Terenzini and colleagues is longitudinal, depicting sets of factors impacting on students' learning outcomes. While the present study does not adopt a longitudinal approach, the model nevertheless provides an instructive framework for understanding the interrelationships between students' out-of-class peer experiences, attitudinal factors such as level of satisfaction with their university experience and perceptions of coping, and student commitments outside of their study program, particularly paid work commitments. The results of the present study contribute to an expansion of the Terenzini et al. model, as illustrated in Figure 1.

Participants

All undergraduate students in a single faculty of the University of Melbourne were surveyed. In light of the importance Terenzini and colleagues (1995) attach to coursework and curriculum patterns, the sample was chosen on the premise that it represents a relatively cohesive learning community in which students move through a three-year degree program in cohort groups within a tightly structured coursework program. At the time of data collection, coursework in this Faculty was offered in traditional face-to-face mode, with all students required to attend weekly on-campus lectures and tutorials. The online components of the coursework were either supplementary lecture materials available on the web, or communication facilities such as discussion fora and email. No units were delivered solely online.

The sample comprised a greater proportion of males (57%) than females (43%) with ages ranging from 17 to 47 years (mean age 21 years). Only 6% were non-traditional age students (that is, older than 25 years). The majority were enrolled full time (96%) and were non-residential (94%). Approximately one third of the sample were international students for whom English is a second language. Details of the sample are presented in Table 1.

INSERT TABLE 1 ABOUT HERE

Design, Procedure and Analysis

A paper survey was distributed to all students attending lectures in the Faculty early in Semester 2, 2002. The survey comprised mainly closed Likert-type items, with two open-ended questions at the end. It was informed by the research literature and comprised items on: i. demographic background; ii. part-time paid work commitments; iii. attitudes to and perceptions of university experience; and iv. the extent and nature of out-of-class peer interactions. Examples of items are included in Appendix 1. Students completed the survey in approximately 10 minutes during nominated lectures and 488 were returned. Approximately two-thirds of all undergraduate students in the Faculty were present at the lectures and the response rate among those in attendance was extremely high – 100% in some cases.

Quantitative data were analysed using SPSS software. After collating descriptive statistics, cross-tabulations were undertaken. Independent *t*-tests and chi-square tests were conducted to determine significance levels of relationships between nominated variables. All significance levels are reported at $p<0.01$. Qualitative data collected via the two open-ended questions are not reported in this paper.

Results and Discussion

Interacting with peers in the learning community

Across the three year groups sampled, the most common form of peer interaction revolved around discussing assignments with peers. A substantial majority (81%) of all students sampled had contact with peers for this purpose on a daily or weekly basis. Interestingly, the majority of students (64%) met with peers on a social basis at least weekly. Such engagement with the learning community around both academic and social activities is much more apparent in this sample of students than it is at the national level in Australian universities (see McInnis, James & Hartley, 2000). One reason for this may be the nature of collaborative activities around assignments within this Faculty, though there may be other explanations. Additional forms of peer interaction are shown in Table 2, in order of frequency of occurrence.

Peer interactions and student satisfaction

Several significant interrelationships exist between students' attitudes and perceptions and the extent and nature of their peer interactions. There is a statistically significant relationship between the frequency of out-of-class peer interactions and student satisfaction with their university experience and enjoyment of their course overall. Students who interacted with peers regularly were more likely to report positive perceptions of their ability to cope with their study load and to balance study with other aspects of their life, including paid work off campus.

Those students reporting the greatest level of satisfaction with their academic progress were typically the ones interacting with peers most regularly and in the widest range of social contexts, including academic – studying for a test or exam, discussing an assignment, collaborating on a project, and meeting socially. Those least satisfied with their academic progress were significantly more likely to restrict their peer interactions to borrowing course materials from friends.

More broadly, students were asked to indicate how satisfied they felt with how they were balancing study with other aspects of their lives, such as paid work, sport, and household commitments. Those indicating the highest levels of satisfaction in this area reported engaging with peers both socially and academically more frequently than their less satisfied peers. In other words, they met socially with peers in their course and discussed assignments significantly more often than their peers. Interestingly, the students most satisfied with their ability to balance commitments were also the ones who used email and online discussions more than other students in the course.

On the other hand, students who indicated that they felt under pressure in their course most of the time typically socialised with peers in their course least often. They also had a greater tendency to borrow course materials from their friends. These students' peer interactions tended to revolve around working on a course area where they had problems, or studying for tests or exams with peers.

The emerging picture, then, depicts two distinctive patterns of interaction which are closely related to students' sense of coping and satisfaction with their study and the place it occupies in

their lives. Students who feel under pressure typically tend to restrict out-of-class peer interactions to limited academically-focussed activities. They demonstrate a "just-in-time" mentality which, while accomplishing short-term academic goals such as studying for a test or solving a particular course-related problem, does not necessarily lend itself to satisfying learning experiences overall. Those indicating higher levels of satisfaction with their academic progress and their ability to manage study and other dimensions of their lives, typically interact with peers in a combination of social and academic contexts. They are also more likely to balance face-to-face interactions with online forms of communication. Possible causal links between these factors are yet to be explored, but hypothesised interrelationships between these variables are demonstrated in Figure 1.

Group differences in peer interactions

Year group differences Year group cohorts are a feature of the degree structure in this Faculty. First year students collaborated significantly more with peers on projects and consulted with peers about course-related problems significantly more than their second and third (final) year counterparts. Second year students participated significantly less than did other year groups in peer collaboration on projects and consulted with peers when they encountered course difficulties. Students in their second year of study also studied less with peers than first and third years, and participated less in the use of computer-mediated communication (CMC). Yet they met socially somewhat more than their first and third year counterparts.

The "second year slump" phenomenon is a noteworthy one pointing to the unique experiences and needs of students in their second year of university study. Having made the transition to higher education and successfully negotiated their first year of study, second year students are typically more at ease in the social environment of the university. They have had time to make friends and to determine how much study and effort is required to attain the grades they need or aspire to. The relative lack of engagement with the peer group evident in this second year cohort highlights the importance of developing programs and academic challenges designed to enhance second year students' connection to the learning community, both in- and out of class. It is possible that the "second year slump" may lead to disengagement unless academics, administrators and support staff unite to cater for the particular needs of students in the middle year of their degree programs.

Gender differences There were no significant gender differences in the ways students interacted with their peers, however some trends are evident. Males tended to work with peers on task-specific areas such as studying for a test, working on a project or discussing assignments. Females on the other hand typically approached peers more frequently when they had course-related problems or when they needed to borrow course materials. Females also socialised slightly more than males. In terms of CMC, males used email somewhat more than females, while the reverse is true in the case of online discussion groups.

Achievement level differences There was a significant statistical relationship between achievement levels and the way students related to peers in their course. Those in the mid to high achievement bands (i.e., with a course average of 71-80%), typically collaborated with peers and discussed assignments and course-related problems more frequently than did students with lower achievement scores, regardless of year level. Conversely, those scoring below average grades in

the course tended to discuss assignment-related issues significantly less than did their peers across all year levels.

Terenzini et al. (1995) commented on the need for closer investigation of the kinds of social interactions which proved educationally beneficial for learners in higher education. These findings go some way towards highlighting the value of time spent interacting with peers around course-related discussions. Clearly, causal connections between achievement level and type of peer interaction cannot be drawn, but the fact that a positive relationship of this kind exists is worthy of note.

International and local student differences International students made up just over one third of the total sample. For a large proportion of these students, English is not their native language. In this Faculty international students tended to seek out peers to discuss course areas where they were encountering difficulties significantly more than local students, yet they met socially significantly less than their peers. International students typically made greater use of CMC on a regular basis. They also tended to study with peers for tests and exams, and borrowed course materials more than their locally-based peers. We did not investigate whether these interactions were predominantly with other international students, but this will be the subject of future investigations. Broadly, the international students in this sample typically engaged with peers around task-focussed academic activities, rather than in social settings.

There may be several reasons for this pattern. They include the fact that international students in Australian universities are faced with paying full fees for their courses. In some studies this has been found to heighten these students' focus on achieving high scores and getting the best "value for money" from their study. Another reason for international students' relatively low participation in social activities with peers in their course may be language barriers. This points to the widely acknowledged importance of faculty-based social activities - such as lunchtime barbeques – which support the integration of all students into the learning community, helping to break down potential alienation of students for whom the dominant language and culture may not be familiar.

Differences in use of computer-mediated communication (CMC)

Computer-mediated forms of communication did not feature strongly as a means of interaction among students in this sample. There was little evidence of students interacting online for discussion purposes, or via email. A large proportion (72%) of students surveyed had never engaged in online discussion groups, while half had never emailed another student about their course. First year students who were 19 years or younger (that is, school-leavers) reported using online discussion groups to collaborate significantly more than did students in other age groups. This is consistent with the increasing familiarity with and widespread use of ICTs in school learning contexts from which these young people come.

A significant relationship was found between use of CMC and student achievement. Those with university entrance scores in the lower achievement bands used email to correspond with peers in their course significantly more than did those in higher achievement bands. One reason for this includes the anonymity afforded by electronic forms of communication. It is acknowledged that CMCs provide a "safe" vehicle for communicating with faculty and peers,

particularly when students feel nervous or insecure about asking questions or contributing in face-to-face group contexts (Krause & Duchesne, 2000). In particular, students with lower achievement levels may feel insecure and lacking in confidence in the presence of their peers and/or teachers. CMC can provide an avenue of communication which may build these students' confidence and encourage them to contribute to and participate more fully in the learning community (Gatz & Hirt, 2000). However, caution should also be exercised to ensure that these students do not become disengaged from the community by relying solely on electronic forms of communication which may in fact keep them from participating fully in the learning environment.

Notably, students who felt most overwhelmed by their study workload tended to use electronic forms of communication in the form of email and online discussion more - and to meet socially with peers less frequently - than peers who felt they were coping with the workload. Conversely, those most satisfied with how they were coping with their subject load in the course typically indicated more frequent face-to-face socialising with classmates and less frequent email and online discussion activity with peers than those who felt they were not coping well. While these patterns need to be explored more fully, they contribute to the growing discussion around the limitations of CMC as a poor substitute for face-to-face interactions. Those who feel they are coping best with their studies appear to capitalise on opportunities for face-to-face social engagement. Students who report being overwhelmed with their study workload may use online communication for a number of reasons, including perceived lack of time or feelings of intellectual or social inadequacy within their peer group. Whatever the reason or combination of reasons, these students need to be connected to the learning community more effectively. While online communication serves an important purpose, it should be seen as only one of a raft of communication forms, rather than as a substitute for students engaging with peers face-to-face.

Paid work and student interaction

Involvement in paid work during the semester does not necessarily impede students' engagement with the learning community and their peer interactions. Evidence points to students being strategic about seeking help from peers when they need it, despite relatively demanding paid work commitments. Those who work 16-20 hours per week during semester reported seeking out their peers to discuss problem areas in the course significantly more than did any other groups, including those who did not work at all. Not unexpectedly, this group also borrowed course materials from friends more often than others surveyed. Many academics would argue that paid work prevents students from attending lectures, which in turn increases the level of borrowing from friends. It is not surprising to find that the more hours per week students in this sample were engaged in paid work, the less frequently they met socially with peers in the course.

Building on an existing model of student engagement

The results of this study emphasise the complex interrelationships between students' out-of-class experiences, classroom experiences, and coursework and curricular patterns in higher education learning communities, as depicted by Terenzini et al. (1995) in their conceptual model of college impact on learning outcomes. As a result of our findings, we propose an expanded version of this model, highlighting the interrelationships between the already-identified factors (shown in Figure 1), attitudinal factors and students' commitment to out-of-class non-academic

activities, particularly part-time paid work. In preparing their conceptual model of college impact on learning outcomes, Terenzini and colleagues dropped the variables of "hours worked" both on and off campus, and "personal experiences". Australian data indicate that students' commitment to part-time paid work plays a significant role in the ways they interact and engage with the university learning community (McInnis & Hartley, 2002) and that, as demonstrated in Figure 1, students' pre-university commitments to paid work play a key role in their ongoing involvement in part-time jobs while studying at university. We argue that paid work commitments should be considered a key factor in developing future models of student engagement, as indicated in Figure 1.

INSERT FIGURE 1 ABOUT HERE

Implications and Future Directions

The study has implications for identifying and responding to a variety of issues pertaining to the ways in which students engage with their study and learning communities. If, as many scholars argue, social integration into higher education learning communities has such an influential role in students' persistence, academic achievement, personal development and satisfaction, then the nature and quality of students' out-of-class peer interactions needs to be taken seriously and investigated closely. This single-faculty study represents just one approach to accomplishing this goal. Yet it sheds light on several fruitful avenues for further investigation.

The nature of students' engagement in out-of-class peer interactions varies across groups according to factors such as age, language background and academic achievement levels. The study draws attention to the significant relationship between peer interaction and student outcomes such as satisfaction, perceptions of coping, overall enjoyment of the course, and perceived ability to balance university study with other aspects of life such as part-time paid work. It also highlights some of the ways in which ICTs are changing the ways students learn and interact with each other. Opportunities for students to participate in a combination of face-to-face and online virtual learning communities are increasing. Ideally, these learning contexts should be seamless (Kuh, Palmer & Kish, 2003), providing students with a holistic and integrated educational experience. We have drawn attention to just a few ways in which students are using ICTs to communicate with each other. There is scope for a broader investigation of the ways in which CMCs impact on the quality of students' learning and interactions with peers and staff.

International students for whom English is not their first language are participating in increasing numbers in Australian universities. As higher education becomes increasingly globalised, this trend is evident in most developed countries. If we are serious about offering an inclusive education which encourages engagement through both social and academic avenues, then we will pay attention to providing for quality out-of-class peer experiences for all students, particularly those for whom language constraints may be potentially prohibitive. To this end, there is merit in considering creative combinations of face-to-face and virtual opportunities, around both task-focussed and socially-oriented activities.

This study is limited by the fact that it represents the experiences of undergraduate students in a single faculty of one Australian university. We also recognise that caution is needed in interpreting results from the point of view of frequency counts. The extent to which students engage in a particular form of interaction does not necessarily equate with quality. Nevertheless the results point to the value of investigating the variable nature of student experience across year levels and groups. There would be merit in replicating this study in other faculties and universities in Australia and internationally to determine what, if any, discipline- and context-specific differences exist in the ways university students interact with their peers in learning communities. In particular there is a need to investigate the complex field of CMC and its role in learning communities. This study investigated only email and online discussions among peers. Clearly this is a fruitful avenue to explore and expand, particularly from the point of view of student learning outcomes and the quality of the learning experience. In particular, there would be merit in considering the ways in which online delivery of entire subjects or courses impacts on students' peer interaction patterns. In virtual learning environments, the concept of "out-of-class" needs to be redefined since the boundaries between in- and out-of-class exchanges are increasingly blurred.

The study has implications for teaching staff, administrators and student support services alike. If learning communities are to function seamlessly to promote the holistic development of all students – including those from under-represented groups - all members of the higher education community need to work together. Administrators need to consider implications for resourcing, including staff development and the provision of physical spaces for students to operate in out-of-class study and mentor groups. Student support services and teaching staff need to collaborate to enhance the experience of, for example, international students who may require language support or peer support networks to assist them in bridging potential cultural divides. And researchers are faced with the challenge of reconceptualising the in- and out-of-class dichotomy which up to this point has served our purposes, but which now demands new approaches to analysis and interpretation.

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FIGURES AND TABLES

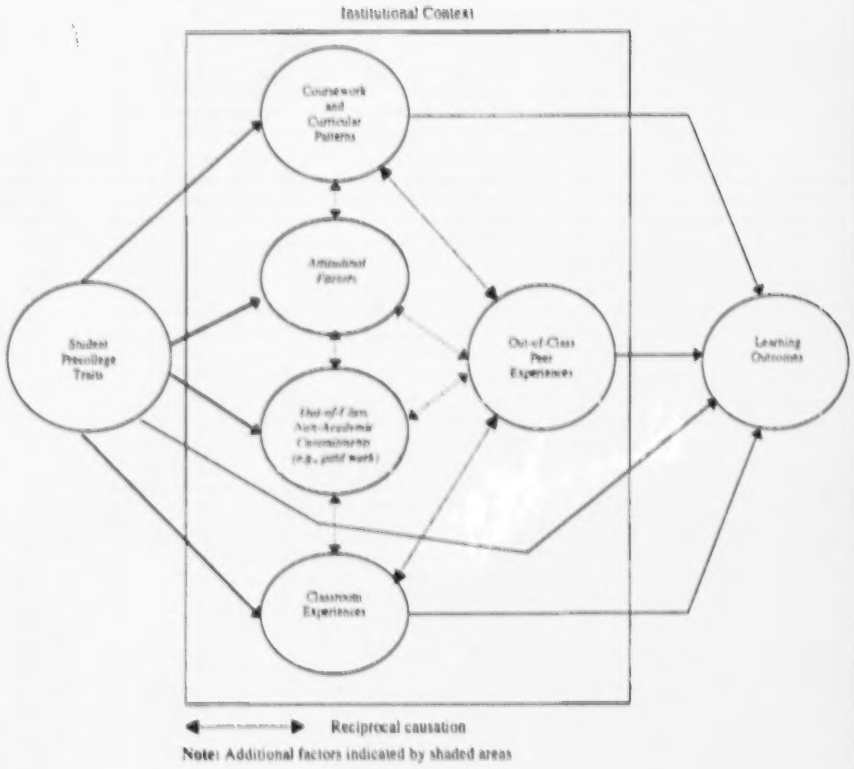

FIGURE 1 Adaptation of the Terenzini et al. (1995) Conceptual Model of College Impact on Learning Outcomes (adapted from Terenzini et al., 1995, p. 26)

Table 1 Sample demographics

	Gender		Age		Home Location		Study Mode	
	Male n (%)	Female n (%)	Traditional n (%)	Non-Traditional n (%)	International n (%)	Local n (%)	Full-time n (%)	Part-time n (%)
Total Sample	279 (57%)	209 (43%)	461 (94%)	27 (6%)	160 (33%)	328 (67%)	468 (96%)	20 (4%)

Table 2 Forms of peer interaction in order of frequency of occurrence

(expressed as a percentage of total sample)

Form of interaction	Percentage of students who interact daily or weekly	Percentage of students who *never* interact in this way
Discussing an assignment	81%	2%
Meeting socially with peers in the course	64%	8%
Collaborating on a project	62%	5%
Working on a course area where I have problems	41%	12%
Borrowing course materials from friends	34%	15%
Studying for a test or exam	27%	16%
Emailing another student about the course	10%	50%
Using online discussion groups in the course	8%	72%

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Appendix 1: Sample Survey Items

Following are excerpts from the survey instrument.

Your University Experience This Year

So far this year...	Strongly Agree				Strongly Disagree
1. I am satisfied with my academic progress	1	2	3	4	5
2. I feel overwhelmed with my study workload much of the time	1	2	3	4	5
3. I am coping with the subject load in this course	1	2	3	4	5
4. I feel under pressure most of the time	1	2	3	4	5
5. I am satisfied with the way I am balancing study with other aspects of my life	1	2	3	4	5

This year I have made **contact with other students in my course** in the following ways:

	Daily	Weekly	Irregularly	Never
Studying for a test or exam	1	2	3	4
Collaborating on a project	1	2	3	4
Discussing an assignment	1	2	3	4
Working on a course area where I have problems	1	2	3	4
Emailing another student about the course	1	2	3	4
Using online discussion groups in the course	1	2	3	4
Borrowing course materials from friends	1	2	3	4
Meeting socially	1	2	3	4

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